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Research Article

Customer Supply Chain Integration and Cost Operational Performance in Sudanese, Service Institutions (Medical Field)

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Abstract: The purpose of this study is to investigate the influence of supply chain integration (SCI) on services institutions (medical field) operational Performance (OP). The current study is considered as a causality study, it investigates the impact of SCI elements on services institutions (medical field) OP. The study surveyed the managers working at the services institutions (medical field). Practical data were collected from (307) managers out of (330) managers, by means of a questionnaire which developed and refined through experts' interviews and the panel of judges committee. Statistical techniques such as descriptive statistics, correlation, and multiple regressions were employed. The results of the study indicated a positive significant relationship between SCI and services institutions OP. The results also indicated that the managers in services institutions (medical field) were almost similar in their customer integration indicators. However, customer integration indicated that there are strong inter-relationships and interactions among the one component of SCI between them and OP. Finally, the results showed that the respondents believed that there is a strong relationship between SCI and OP. Results indicated that the customer integration was having the highest effect on OP (cost performance). Finally, the current study recommend considering improving the one component of SCI because they are strongly interrelated.
Keywords: Supply Chain Integration (SCI), Customer Integration (II), Operational Performance (OP), Cost Performance (medical field).

Introduction

Recent technological advancement of communication and transportation lead to globalization. Due to globalization customers' needs and requirements have been changed and developed. Customers need a suitable product in suitable place at suitable time with high quality and suitable cost. Any organization would like to compete in recent hyper-market should match with the above mentioned customers' requirements. To fulfill the customers' requirements organizations should improve all their activities and processes. Supply chain management is a system that improves all activities which carried out by organization. Supply chain management is a complex system which covers all supportive activities from suppliers to after sales services. To be able to grow and survive any organization has to identify its strengths and weaknesses, to re-enforce on strengths and overcome weaknesses. Implementing supply chain management can be a source of competitive advantages which lead to better overall organizations' performance.

[1] stated that integration in supply chain plays a dominant role for improving organization's performance and gaining competitive advantage. [2] said that to utilize the supply chain at its maximum performance level, organizations have to integrate its goals and activities together [3]

mentioned that supply-chain partners need to focus on various elements to ensure competitive advantage: price negotiation to increase in margin, and financial collaboration to ensure innovative product design. [4] Announced that supply chain management requires integration and coordination for satisfying and responding to change in consumer demand. Finally, [5] pointed out that supply chain integration influences performance.

Therefore, it seems that its worth to study the effect of integration of supply chain processes and activities on operational performance, so this study investigates the impact of supply chain integration on operational performance at services organizations (medical field).There are many challenges and obstacles were confronting supply chain management which in turn affected the overall performance at these organizations. First, different departments are concerned with achieving their own objectives separately. Second, supply chain activities and processes are performed by different departments without specialized people. Third, continuous changes in rules and regulation which imposed by service sector and medical field specially they have other universal regulations associations which lead to delay in supplier selection and delay in preparation of the inputs to services organization. Finally, continuous changing in customer needs and requirements due to tough competitions among the organizations. Consequently, this lead to difficulties in integrating supply chain activities and processes, which delay providing products and services to customers in suitable place at suitable time and losing of competitive advantage.

Firstly, Most of the studies that addressed the operational performance in general focused on the manufacturing companies, production companies and pharmaceutical sector where these studies neglected the service companies (medical field), which represent a true foundation of the national economy, as a play an active role in development of economic and social growth through providing and diversifying services, achieving developmental goals and creating job opportunities. Therefore, this research focused on the studying of operational performance in service companies (medical field), and this is what the previous studies have failed to deal with.

Secondly, this study will explore the relationship between supply chain integration and operational performance. The previous studies such [6] [7] [8] [9] [10], have been studied different types to supply chain integration, this study focus on three dimensions of supply chain integration: internal integration, supplier integration, customer integration as a dimensions of supply chain integration influence operational performance. Internal integration is considered because it is an important and involves obtaining the goals when using and share organization information, thus, should be important for operational performance [6]. Customer integration is considered because they important for organization when it satisfied them, business activities and focus on affects that are important in operational performance [7]. It attempts to create and use new knowledge to develop new products/services, which should also be critical for operational performance [11]. So there is no previous studies investigated the relationship between operational performances with supply chain integration with dimensions, hence, this study was designed to address the relationships between supply chain integration with operational performance.

Finally, previous studies regarding supply chain integration, operation performance have focused mainly on a specific sector, such as manufacturing [12] [13] or production [14], Pharmaceutical sector such as [15] Food industry such as [16] this study covers service sectors (medical field) including private hospitals, private medical centers and private medical services. Thus, this research addresses the gaps and limitations in the literature by investigating the link between supply chain integration, operational performance. Generally this research will examine the operational performance. In addition, the research will investigate the relationship between supply chain integration and operational performance in services firms (medical field) in Khartoum State. Therefore, the managers believed that its worth to study the topic of supply chain integration, so the objective of this research is to answer the following question: Is supply chain integration impact on operational performance in services organizations (medical field)?

The main objective of this study is to investigate the impact of supply chain integration on operational performance in services organizations (medical field). This research will also provide recommendations to services Organizations (medical field), and might be for decision makers. Finally, this study will contribute to scientific field. The first sub-section represents the theoretical contribution of this research which can be considered in terms of the following areas of knowledge: The research contributes to bridging the knowledge gap that was failed in the previous studies, especially in Sudan, on the impact of operation performance in supply chain integration to creating creative performance of workers. This study is an attempt to build a conceptual framework that will contribute to theories and practice in the field of operational performance. The study will provide scientific guidelines and advices through which the services firms operating in Sudan to achieve the efficiency and the effectiveness. Therefore, it may be providing a new scientific addition especially that this study will combine different variables that diagnose the interaction of their variables, which contribute to the development of new concepts, data and relationships on their subjects. Several practical contributions are expected to emerge from the current research representing in. Contribute to knowledge the level of dimensions in operation performance so that organizations can provide quality indicators in supply chain integration as indicators of quality measurement in performance. The results of the study and suggestions recommendations related to the supply chain integration, creative operation performance and the possibility of benefiting from the outputs of study in the reality practical of the service organizations sector (medical field). The study can also draw the attention of managers and decision makers to the importance of user satisfaction in the service organization sector (medical field), in order to enhance its role in operation performance, which helps to create performance. The study can also draw the attention of managers and decision makers to the importance of user satisfaction in the service organization sector (medical field), in order to enhance its role in operation performance, which helps to create performance.

Literature Review

Different researchers defined supply chain integration and operational performance in different ways, each definition was tailored according to the nature of the study, industry, and research objective. Supply chain integration is about collaboration, cooperation and coordination among different players of supply chain which enhances organization's performance. The following section will tackle the concepts of supply chain integration and operational performance, as well as, the relationship between them.

Supply Chain

Supply chain is considered as a system that includes group of activities, processes and sub-processes such as procurement, operations, transportation, warehousing. It aims to provide the products and/or services either to consumer or customer starting with purchasing materials and equipment then transforming it to semi- finished products that will be reprocessed again to produce the final products.

Supply chain management is concerned with the planning and managing the flow of materials, products and services among and between these processes. The ultimate goals of managing supply chain is to provide the products at the agreed delivery time, suitable quality, and competitive price to the customers, and that is reflected by the customer's satisfaction and the overall organizational performance.

The concept of supply chain has been evolved over time. [17] said that supply chain consists of all parties involved directly or indirectly in fulfilling customer demand, it includes all functions involved in receiving and fulfilling a customer's requests. These functions include manufacturers and suppliers, warehouses, transporters, retailers, and final customers. [17] added that the objective of every supply chain is to maximize the overall value created. [18] stated that "Supply chain management is the forming of networks for sourcing raw materials, manufacturing products or creating services, storing and distributing the goods, and delivering them to customers and

consumers". Then they added that the concept of supply chain is used first to reduce costs, and then to improve customer service and get new products to market faster than others. Finally [19] defined supply chain as it is the interrelated series of processes within a firm and across different firms that produce a products or service to the satisfaction of customers.

In summary, the concept of supply chain management was recently introduced which covers all activities carried out by organizations to collaborate with suppliers and customers to satisfy customers' needs, requirements and preferences.

Supply Chain Integration

Due to the intense of global competition, the organizations create cooperative and mutually beneficial relationship among supply chain partners [20]. [21], [22], pointed out that organizations or companies need to implement supply chain integration to meet the new challenges of the global competitive environment. Many studies propose different supply chain definitions. [23], [24], and [25] defined integration of supply chain as a process of collaboration in which companies work together in a cooperative manner to arrive at mutually acceptable outcomes. [26] described supply chain integration as "the degree to which an organization strategically collaborates with its supply chain partners and manages intra- and inter-organization processes to achieve effective and efficient flows of products, services, information, money and decisions, with the objective of providing maximum value to its customers". [27] defined supply chain integration as "the effective coordination of supply chain processes through the seamless flow of information up and down the supply chain". Supply chain integration can be defined as the process through which all parties who involved with supply chain; supplier, organizations and customers, are working independently and dependently in a harmony way to achieve a unite objectives such as providing maximum customer value, lowering overall cost. [28], [29] said that supply chain integration is a key to the success of companies and supply chains.

In this study, supply chain integration defined as the process of collaboration within supply chain players that manage inter and intra-organization activities to achieve effective and efficient flow of products, services and information to provide a maximum value to the customer in right place at suitable price and high speed. Supply chain integration was measured by: internal, supplier and customer integration.

Customer Integration

Customers are considering the source of life for organizations whatever they provide either product or service and it's considered the fresh air that is needed by the organization to grow and being able to survive in the presence of the strong and tough competitions. Customer needs and requirements are always transformed, so what was considered essential in the past perhaps it becomes complementary in the near future. Accordingly, the organizations should monitor the external environment such as political, economic, social, technological, and legal changes Moreover it should behave proactively but not reactively to be superior over competitors in satisfying customer needs.

Managing the relationship with customer is considered a vital element in supply chain. Customer integration was discussed and defined by different researchers' perspectives. [30], added that customer integration involves core competencies derived from coordination with critical customers. [31] has studied the integration with buyers.

[32] Analyzed supply chain integration from different perspectives: attitudes, pattern, and practices. While other authors have studied integration with customers and suppliers such as [33] examined supply chain integration as a single dimensional construct, [34] considered a broader perspective for supply chain integration as internal integration and external integration. [35] Said that both supplier integration and customer integration can be classified as external integration.

In current study, customer integration defined as the process of building and maintaining a strong relationship and partnership with the customers. It includes sharing the knowledge, experiences, products, services, and suggestions with customers. It was measured by selected items that explore the relationship and partnership and related issues.

The current research addresses the supply chain integration which includes internal integration and customer integration.

Supply Chain Operational Performance

The concept of supply chain operational performance has been emerged from supply chain strategy which derived from overall business strategy. A competitive strategy defined as "the set of customer needs that it seeks to satisfy through its products and services" [32]. Each organization attempt to adopt different competitive strategy that fit to its strategy, then it seeks to afford the suitable capabilities and resources that help to achieve it. For example, one organization aims to provide high quality products with high price, another organization aims to provide high availability of a variety of products of reasonable quality at low price, while another organization aims to provide too many products so its competitive strategy must be build to around providing the customer convenience, availability, and responsiveness, and so on. Any company intended to be successful must fit between supply chain strategy and its competitive strategy. [33] Comment on strategic fit that it's refers to the consistency between the customers priorities that the competitive strategies hope to satisfy. Academicians and researchers have investigated supply chain performance from many different perspectives. [34] Developed supply chain performance measures based on efficiency. [35] Studied profits, delivery speed and transportation costs as a performance measures. [36], investigated firm's supply performance that composed of flexibility, cost, relationship and responsiveness.

[37] And [38] stated that eliminating non-added value activities, decreasing variance of orders and speeding product flows affect organizations performance. [39] mentioned that IT and process innovation can contribute significantly to operational performance. [40] said that organizations must recognize the nature of trade-offs between customer services and costs. The organizations attempt to gain competitive advantages by aligning supply chain processes and decisions with its business strategy. [41] stated that supply chain strategy should ensure that supply chain provides a superior value to the end user in an efficient manner. [42] emphasized that organization success depend heavily on the success of supply chain in which the organization participates as a partner.

[43] Reviewed Porter's competitive strategies (lower cost, focus and differentiation) and argued that business strategy focuses on improving the competitive position of a business units, products and/or services within specific industry or market segment. [44] Indicated that supplier network resources have a significant impact on firm’s performance [45] concluded that logistic integration has mediating effect on operational performance. [46] And [47] said that the use of external linkage performance metrics leads to the creation of end-customer value through integrating activities and communication with other member firms along the supply chain.

[48] Pointed out the importance of operational performance metrics as a standard framework to assess operational performance which includes internal and external firm links. [49] Presented the criteria of performance evaluation through cost, customer service, productivity, asset measurement, quality, time, innovativeness, price, flexibility / adaptability, ability to collaborate, supplier profile, and marketing measures.

This study is considered the operational performance as a group of standards and benchmarks that are adopted and used by the organizations to achieve competitive advantage, customer satisfaction, and maximum level of profitability. In this study supply chain operational performance was measured by the following dimensions: Cost performance because they are considered the most common dimensions that were investigated between previous studies.

Cost performance

Building the strategy based on reducing the overall costs entail to run out the following: reducing inventories, maximum utilization of resources, work-in-process inventory turnover, and eliminating non-added value activities.

Likely the most common and important measure in evaluating operational supply chain is cost. [50] Defined the cost as the total cost incurred to accomplish specific operation. Organization attempt to decrease prices and maximizing profit. [51] Defined cost as the summation of all costs that includes: Inbound and outbound freight, warehouse cost, third party storage cost, order processing cost, direct labor cost, administrative and service costs. [52] Defined the cost as "the total costs associated with operating the supply chain". In this research the author defined the cost as the total costs and expenses that are incurred by completing all/and or specific activities and operations within supply chain. It was measured by selected items that reflect the total incurred costs and expenses.

Referring to the above previous studies and the referring to the importance of supply chain management and the resulting of substantial benefits as a result of integration, the researcher was investigating the supply chain integration as an independent variable represented by: internal, customer integration, the operational performance as a dependent variable represented by: service performance, cost performance.

Relationship between Supply Chain Integration and Operational Performance

In the literature reviews, it was shown that there is a strong relationship between supply chain integration and performance. Some studies claimed that there is a strong relationship between supplier and customer integration and organizational performance, other studies comments the presence of relationship between upstream and downstream interactions and operational performance, another group of studies assured the inevitability of relationship between supplier, internal, and customer integration with the overall organizational performance.

Almost all studies concluded that the supply chain integration is considered as vital process that affects operational performance, consequently the organizations' overall business performance.

[53] concluded that supply chain practices were positively associated with aggregation measures of cost and flexibility. [54]; [55]; and [56] found a positive and direct relationship between information technology integration and supply chain integration [57] said that: internal integration of different departments within a firm should act as integrated process. [58]; Gimenez and [59]; and [60] showed the importance of downstream integration. [61] stated that supply chain integration affects operational performance, and the degree of integration influences cost and efficiency. [62] and [50] pointed out that external integration emphasizes the importance of cooperation and collaboration with suppliers and customers.

So in this study it assume that there is positive relationship between supply chain integration with their dimension (internal integration) and operational performance with their dimension (cost performance) in service sector (medical field) that consider on (private hospitals, private medical centers, private medical institutions) in Khartoum state.

RBV Theory

Resource-Based View, Resource Dependence Theory emphasizes the term "resource" as an important feature within the context of the formulation and implementation of corporate strategy in order to generate persistent competitive advantages [63]. However, unlike the Resource-Based View, Resource Dependence Theory looks at the company from an external perspective [63]. Thus, the dependence of a company on external resources allows it to acquire new businesses, to create co-operations and strategic alliances, and merge with other companies Resource-based view seeks the sources of competitive advantage from within the organization, analyzing its strengths and

weaknesses. According to this view, companies can gain competitive advantage if they able to achieve superior resources and capabilities and these are valuable, rare, inimitable and non-substitutable [63]. Thus the objective is to identify, develop and deploying key resources to maximize returns, the relational view finds the source of competitive advantage in the collaboration between firms and more specific, it identifies four sources of inter-organizational competitive advantage: relation specific assets, knowledge sharing routines, complementary resources / abilities and effective governance [64].

[40] RBV further suggests that the value of SCI as a resources lies in its ability to create organizational processes that drive firms to prioritize supply chain relationships. SCI as an intangible capability allows managers to use both formal and informal relationship mechanisms among supply chain members to facilitate a long-term approach to SCM [19].

more interactions or negotiations the company undertakes with its external environment, the more assured it will become in response to its access to resources, and the more dependent it becomes on the groups which own the resources it needs [65]. The company is constantly being watched by the external groups which control its resources, and are therefore able to influence the entire resource allocation process [65] based on the theoretical point of view, this study will develop a testable hypotheses.

Hypotheses Development

Based on the problem statement and its elements, the following hypotheses can be derived:

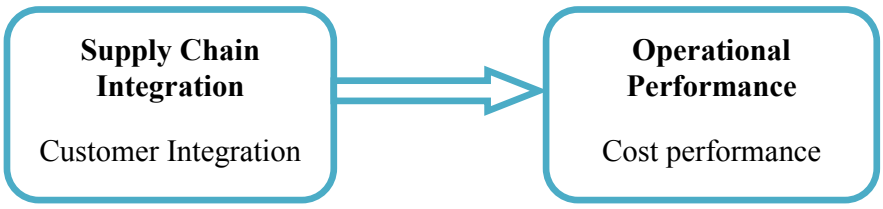
The relationship between supply chain integration and operational performance

In literature a number of scholars like [6], [7], [8], [9], [10], beside others, are discussed supply chain integration concept is important in developing supply chain focus to enhance the organizational performance.[11], [12], [13] indicates a positive relationship between supply chain integration and firm performance. While, [14], [15], [16] indicates a positive relationship between supply chain integration and performance. Based on the above discussions the following hypotheses are generated:

H1. There is a relationship between supply chain integration and operational performance.

Conceptual Framework

Based on previous studies of supply chain integration and depending on different models, the current study chooses to set the study model that shows the impact of supply chain integration with its all elements (internal and customer Integration) on operational performance (Cost performance, service performance) .



Source: Azzam and Abdalgader (2018)

Methodology

Data Collection

A cross-sectional survey was used for data collection from non-probability sample consisted of Sudanese services institutions. A 5-point Likert scale with end points of ‘‘strongly disagree’’ and ‘‘strongly agree’’ was used to measure the items. The questionnaire was developed, based on the measurement of the previous studies in supply chain integration and operational performance, firstly

developed in English then back to back translation from English to Arabic was conducted. This procedure guarantees that the English and the Arabic versions of the questionnaire have equal measures. Subsequently, a number of researchers in the same field assessed the correctness and the clearance of questions and measurement items a pilot test was performed on 50 medical institutions operating in Khartoum State. After the pretest, the survey was changed slightly for clarification.

All constructs were initially operational by a set of four or more items the measurement items of SCI adopted from [66], [67] value co-creation adopted from [68] for increasing the response rate All questionnaires, attached with a cover letter, target respondents were executive/senior managers responsible for SCM or related position in their organizations, From the resulting sample size of (330), (307) responses were received, resulting in a response rate of 85.%. A total of 15 were discarded due to incomplete information the final sample included.

Table 1. Response rate of questionnaire

Total distributed questionnaires	**330**
Total questionnaires received from respondents	307
Valid questionnaires received from respondents	0
Invalid questionnaires	0
Questionnaires not received	23
Overall response rate	307
Useable response rate	307
Source: prepared by researcher from data (2018)	

The response bias was assessed by comparing the means of the responses in the last quartile of respondents using this design, a Chi-square and DF of all the variables used in the study revealed significant differences between the groups. So a control test is conducted for the variables(competitors, suppliers, company age, job title, company ownership,) Employing structural equation modeling (SEM) conducted by using AMOS version 23 for testing the measurement and structural model requires large samples, [69] suggest that a minimum of 100 to 150 observations should be satisfactory. Based on these definitions, the sample of this study satisfy the requirement of using CFA to test the full measurement model simultaneously.

Analysis and results

The framework is tested by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) in structural equation modeling (SEM) in order to evaluate the consistency among scale items (70). In this study, the EFA and CFA are used to test the measurement model of the structural SCI and operational performance. For validate the constructed model the following tools used convergent and discriminate validity, reliability, and common method bias. Moreover to test the inter-relationships between the variables, the direct relationship between Structural SCI and operational performance, Structural SCI and operational performance modeling are investigated. All these tests in detail in the following sections.

Exploratory factor analysis

The results of SCI factor analysis by a principal component analysis. The EFA with varimax rotation was performed for both constructs: SCI and operational performance. First, this analysis was applied for SCI. There were 12 items related to SCI, and at the end of the steps 7 items were loaded on two different factors.

Based on the loadings, these factors were named credibility (CRE), cooperative norms (coo), also. The Cronbach α values are 0.638, internal integration 0.715, customer integration and 0.771 for service performance and 0.761 for cost performance. These values are greater than the threshold value 0.7 [71], therefore all of them are used in this study.

Confirmatory factor analysis

CFA tests the measurement model of variables. Therefore, SCI, operational performance was tested with a first-order confirmatory factor model to evaluate the construct validity. The confirmatory analysis results confirm that structures for SCI and operational performance.

Testing the correlation conducted by compared the squared correlation between the latent constructs to their average variance extracted (AVE) estimates. Based on that discriminate validity exists if the items share more common variance with their respective construct than any variance the construct shares with the other constructs. Therefore, the correlation between each couple of variables in the model construct has to be less than the AVE of each variable construct. Comparing the correlation coefficients given in Table 1, it can be conclude that none of the squared correlations is greater than the AVE for each variable construct. These outputs of the test totally indicate as strong evidence of discriminate validity between the theoretical constructs. Reliability was assessed using internal consistency method via Cronbach's alpha[109] All variables and dimensions have a Cronbach's alpha greater than 0.70 (see table 2). This result establishes the reliability of all the theoretical constructs.

Moreover, the AVE values for all dimensions exceed 0.50. Taken together, these results imply that the instrument constructs exhibit good psychometric properties.

Table 2. Cronbach's Alpha for Study Variables

Construct	Variable	Number of items	Cronbach's alpha
Supply chain integration	Customer	2	.715
Operational performance	Cost	3	.761
Source: prepared by researchers.			

Hypothesis testing

The hypothesized structural equations model (Figure 2) was tested using LISREL [71], with variance–covariance matrices for the latent variables and residuals used as input. Given the satisfactory measurement results, we used summated scores to measure the model's latent constructs. The use of summated scores reduces the model's complexity, identification problems, and the variable-to-sample ratio [72] In the hypothesized structural model, the measurement coefficients were constrained to one and the corresponding error coefficients were constrained to zero. The model parameters were estimated using the method of maximum likelihood [71]. To assess the impact of supply chain integration such as (internal integration) on operational performance such as (cost performance) structural equation modeling has been employed and a measurement model of these constructs. The structural model reveals the same value of model fit shown in Table (1) , all the model fit indices for the structural model were not only significant but remain same as in the measurement model. The low index of R square (i.e. 0.22) justifies the underlying theoretical model.

Table 3. Regression Weights: (Group number 1-Default model)

			Estimate	S.E.	C.R.	P
Cost	<---	Customer	.081	.112	.724	.469
Source: prepared by researchers.						

The table (3) shows the probability of getting a critical ratio as large as 3.856 in absolute value is less than 0.001. Also, the probability of getting a critical ratio as large as 3.877 in absolute value is less than 0.001. In other words, the regression weight for customer in the prediction of cost is significantly different from zero at the 0.001 level. Finally the probability of getting a critical ratio as large as 0.724 in absolute value is .469. In other words, the regression weight for customer in the prediction of cost is not significantly different from zero at the 0.05 level.

			Estimate	S.E.	C.R.	P	Result
Cost	<---	Customer	.081	.112	.724	.469	Not support
Source: prepared by researchers.							

Table (2) summarizes the Findings of testing hypotheses concerning the relationships between supply chain integration and operational performance.

The table showed that two of the hypotheses fully supported (cost) with internal integration that mean the medical institutions were integrated internally which lead to provide a good service to customers, in the medical. These findings signify that customer integration show no significant negative relationship on one dimension of operational performance (cost performance) thus, some of hypotheses are not supported.

Results and Discussion

In this section, the study results will be presented and discussed in the light of previous studies as follows:

Result of the current study shows that there is a significant importance of the supply chain integration among medical field institutions. The researcher refers this result to the awareness of the managers, supervisors, and other employees who work at medical institutions about the importance of supply chain integration and its effect on the overall operational performance. Some of independent variable operational performance as (cost performance) has low degree of customer integration. The study showed that there are strong inter-relationships and interactions among the two components of SCI and between them and OP. Finally, the results showed that the respondents believed that there is a weak relationship between customer SCI and cost OP.

Results indicated that the customer integration was having the lowest effect on OP, by customer integration. These results are going with line with the most of previous studies, such as Wong, *et al.,* [73] who showed that there is a negative relationship. Conceptually, in this study and based on the SCI, two factors (customer integration) were found, It can be observed that the most factor of SCI in Sudanese services institutions (medical field) Indeed, this suggests that the SCI construct could be considered in the future operationalization of SCI in Sudan context. The study extend existing research on the performance and supply chain integration relationship, In addition to the study contribution by proposing operational performance in the context of supply chain integration in service sector specially in medical field. Also the present study confirms the notion that SCI will have a weak negative effect on operational performance.

These study support calls of earlier studies which emphasize on that SCI require lower level of customer integration. Thus, for an institution to support the participation of partners it must create suitable customer integration. Furthermore, the direct effect of SCI (internally) with the effect of operational performance is significant and weakness than its direct impact. Although much Studies has been interested in the effect of SCI on business outcomes or any related kind of performance, this study indicated the importance of SCI to detect the impact on operational performance. Specifically, although the supply chain management concept is predicated on SCI (integration) extant research has yet to explicitly consider the implications of SC with regards to supply chain integration efforts. The overarching theoretical contribution relating to the role of SCI is demonstrating that SCI is responsible for external environment behaviors that are unattainable via integrative mechanisms.

Managerial Implication

From a practical perspective, this study provides a number of insights into how institutions can more strongly utilize the internal integration (SCI) to improve operational performance. specifically, managers can use it to expand their understanding the role of SCI on operational performance and

develop specific integration that help to reach customer needs .SCI is fully collaboration of participation and they integrate the institutions internally and externally that should lead to high performance which are difficult for competitors to replicate and can afford institutions a competitive advantage. Moreover the developed conceptual model of the study provides better highlights the interplay between SCI and operational performance on medical field. And it is an important factor for firms to turn competitive advantage.

Limitation and Suggestion for future research

As previous studies there are some limitations in this work, which may encourage future research, the study was cross-sectional study which is provides some evidences about the relationship between SCI and operation performance. therefore a longitudinal study would have to be undertaken to assure the effect of SCI and operation performance .furthermore this study mainly tested SCI and operational performance which may represent a less holistic view for supply chain management, future research may consider the other factor supply chain integration, The sample included medical field in service sector that can be tested in another services sectors, also should be tested in all Sudan while this study tested in Khartoum state only a broad range of firm sizes and industries and often They are different in the level of adopting SCI and operation performance thus future research can test these variables in such specific sector. This study examined SCI by one dimension (customer) as constructs while some suggestion consider trust as one of dimension of SCI therefore future research can measure supplier as part of SCI. In this study, we used operation performance measures by one dimension (cost) a future research would have to expand the dimensions or should tested with another performance such as institutional performance, financial performance.

Conflicts of interest

The authors declare no conflicts of interest.

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